

Patent claims

1. A method for machining workpieces by means of a laser beam, the workpieces being fixed and subsequently exposed at least partially to a laser beam, wherein in a first operating step a plurality of workpieces (4, 5) to be machined are mounted on a lower pressure plate (9) having supporting segments (8) that can be moved in a vertical direction, the top sides of the workpieces (4) are brought into contact in the second operating step with a beam-passing plate as upper pressure plate (3), the upper and lower pressure plates are pressed together with a prescribed contact pressure, the spacing of the supporting segments (8) from the upper plate being set variably, the workpieces (4, 5) to be machined are subsequently exposed to the laser beam (2) through the upper pressure plate (3) between the upper pressure plate (3) and the lower pressure plate (9).

2. The method as claimed in claim 1, wherein the workpiece supports are selectively pressed against the upper plate, and only these are exposed to the laser beam (2).

3. The method as claimed in claim 1, wherein the respective supporting segment (8, 8', 8'') is pressed against the workpieces (4, 5) in a vertical direction in accordance with the desired contact pressure.

4. The method as claimed in claim 1, wherein use is made of supporting segments with individual segment regions (11, 12) which can be moved in a vertical direction and are pressed against the workpiece (4, 5) in accordance with a prescribable contact pressure.

5. The method as claimed in claim 1, wherein the respective supporting segment (8, 8', 8'') is moved in a vertical direction with a first contact pressure until contact occurs with the

upper pressure plate (3), and is pressed against the upper pressure plate (3), and then a second, substantially higher contact pressure is subsequently applied to it during the laser beam machining.

6. The method as claimed in claim 1, wherein, after the laser beam machining, the lower plate is exchanged for a second, already fitted lower plate.

7. Method as claimed in claim 5, wherein the lower plate is provided on the underside with a compressed-air connection and arranged on a base plate with a compressed-air counterpart and pressed against the base plate with the force that is produced by the second, substantially higher contact pressure against the upper pressure plate (3), and the compressed-air connection is thereby sealed.

8. Method as claimed in claim 6, wherein the lower plate is provided on the underside with a compressed-air connection and arranged on a base plate with a compressed-air counterpart and pressed against the base plate with the force that is produced by the second, substantially higher contact pressure against the upper pressure plate (3), and the compressed-air connection is thereby sealed.

9. The method as claimed in claim 1, wherein a beam-passing elastic plastic film (14) is inserted between the upper pressure plate (3) and the workpieces (4, 5) as compensating element in the case of moveably mounted supporting segments (8) or a rigid lower pressure plate.

10. A device for machining workpieces by means of a laser beam, having a laser source (1) a support as lower pressure plate (9) for the workpieces (4, 5), and a beam-passing upper plate (3) on the workpieces for fixing the workpieces during the machining, and also a pressure

generator (10) which acts on at least one of the pressure plates (3, 9), wherein the lower pressure plate (9) has a plurality of workpiece supports for holding the workpieces to be machined, which can be moved in a vertical direction relative to the lower pressure plate and whose spacing from the upper pressure plate can be variably set for the same contact pressure.

11. The device as claimed in claim 10, wherein the lower pressure plate is designed as a pressure chamber (15) to which compressed air can be applied and which has one or more workpiece supports (16, 18) that can be moved in a vertical direction.

12. The device as claimed in claim 10, wherein the lower pressure plate (9) has individual workpiece supports (12, 16, 18) that can be driven separately from one another.

13. The device as claimed in claim 10, wherein the lower pressure plate (9) has individual resiliently mounted workpiece supports, and the pressure plate (9) can be moved in a vertical direction.

14. The device as claimed in claim 12, wherein at least two such lower plates (9) are provided which can be brought alternately into pressure contact with the upper plate (3).

15. The device as claimed in claim 14, wherein the lower plate (9) has on the underside (23) a compressed-air opening (22) that is flush with a corresponding compressed-air opening (24) in a base plate (21) arranged thereunder.

16. The device as claimed in claim 15, wherein the compressed-air opening (22) in the lower plate (9) is designed as a through bore, and the compressed-air opening (24) in the base plate is designed as a bore with a counterbore (25) for holding a seal (26).